NREL Presentation

Mcu-dsp, Inc.
A wireless automation semiconductor company

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Founder and CEO

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Pain and Solution

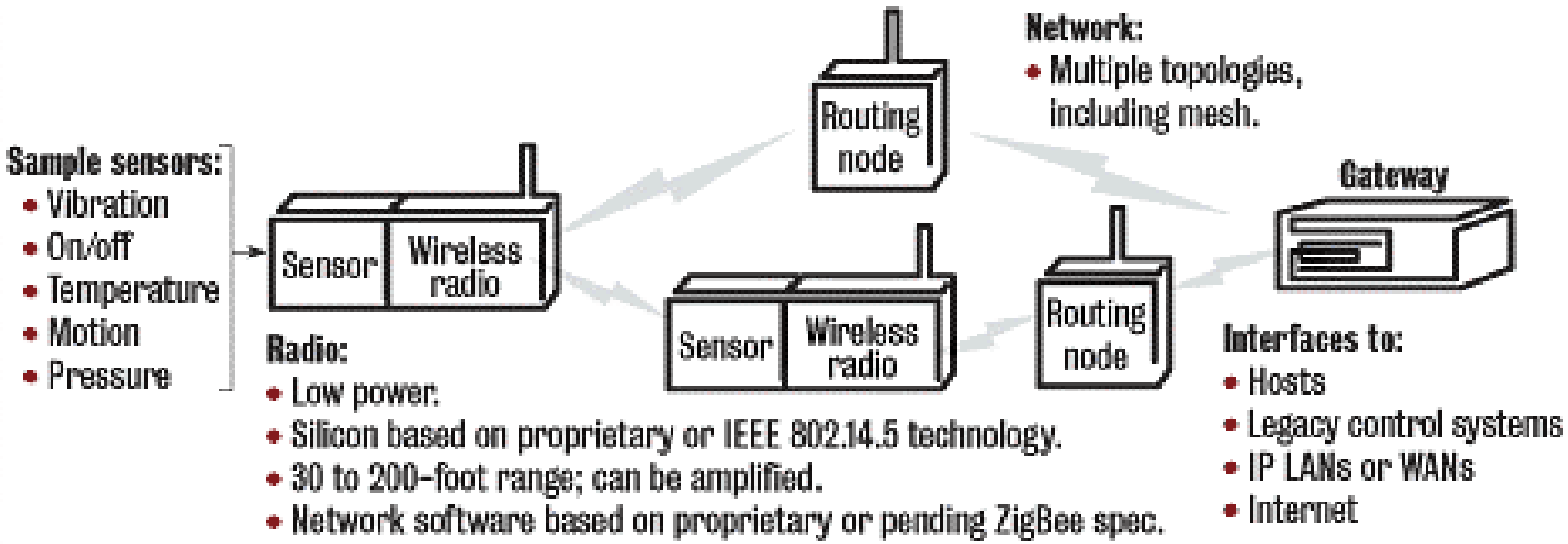
- Wired solutions are expensive and difficult
  - Prevents adoption of automation
- Pain is felt by homes, offices, and factories
  - Everyone wants to reduce monthly energy bills
- Solution is wireless monitoring and control
  - Cost of building automation: From $100k to $15k
  - Result is lower operating costs

The Company

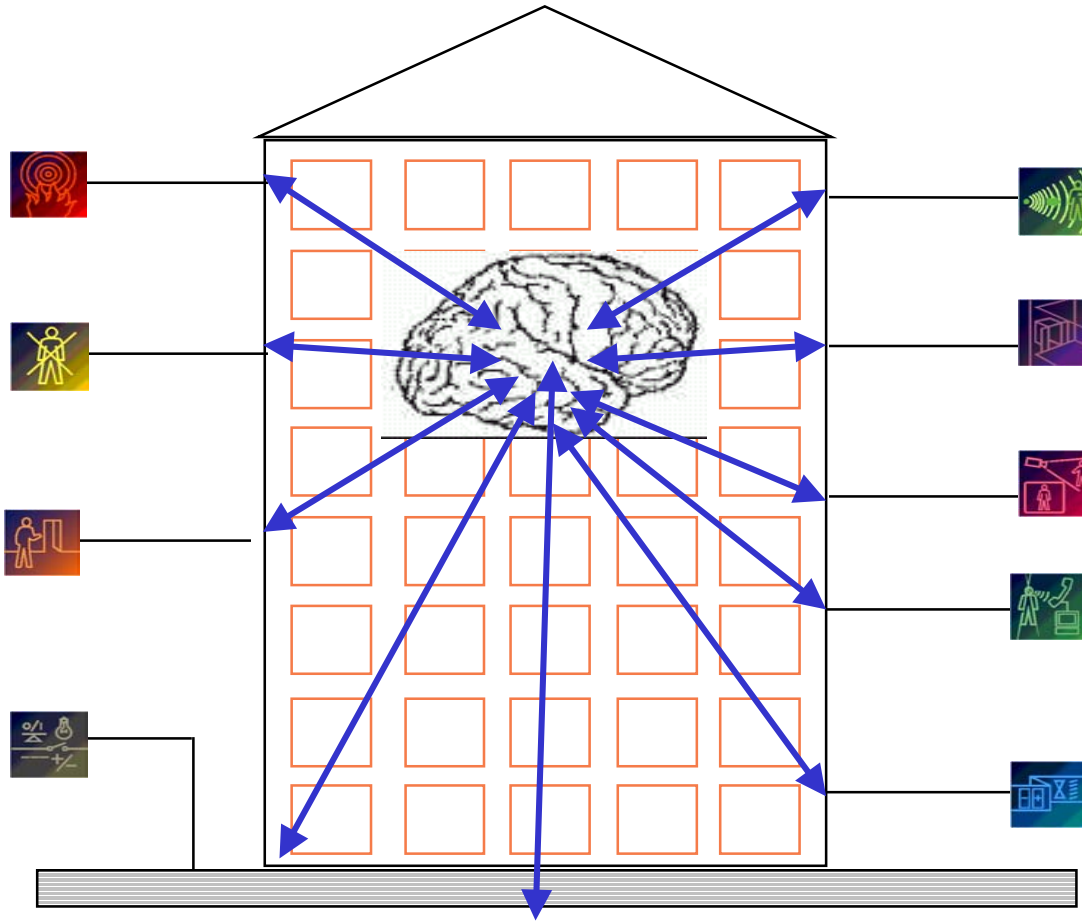
- Mission
  - Market leader in Wireless Sensor Networks silicon solutions
- Business
  - Mcu-dsp is a fabless semiconductor company developing highly integrated Wireless Sensor Network chips for automation applications
  - Formed - February 2004
  - Based in Austin, Texas

Technology

- Wireless sensor networks are inexpensive
- Wireless sensor networks can be deployed everywhere



Example: Smart buildings



FIRE
Functionality checks
Detector service
Fire, Life, Safety

SECURITY
Doors
Integration

ACCESS
Doors
Buildings
Occupancy

ENERGY
Tenant Building
Heat
Lighting
Back-up Generation

LIGHTING
Schedules
Occupancy Sensing

LIFTS
Breakdown
Maintenance Traffic Performance

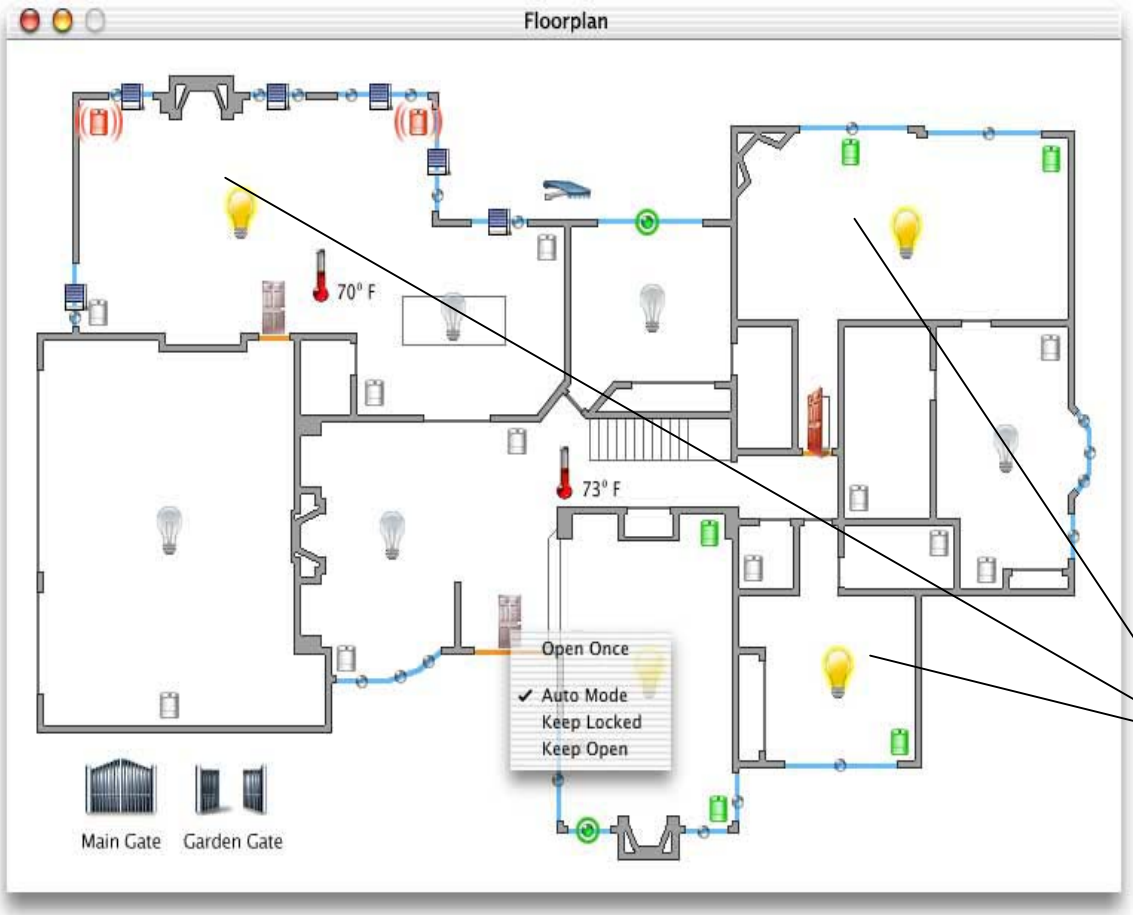
Retrofitting
Existing networks

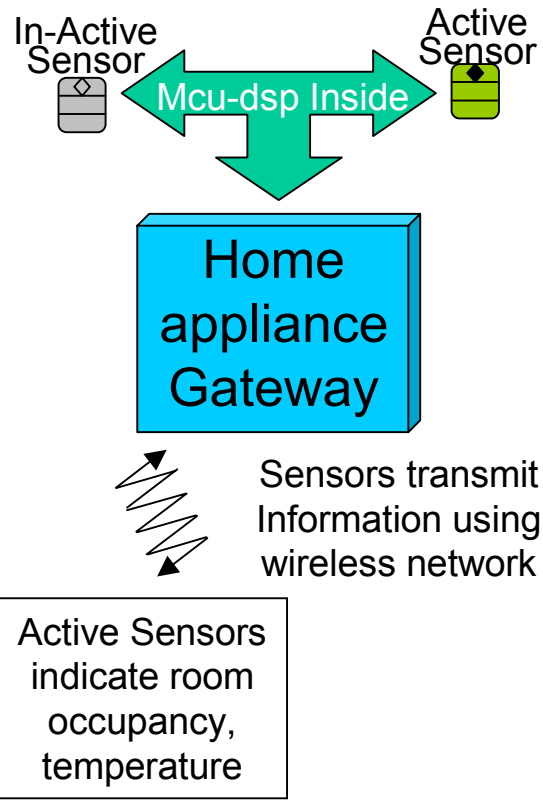
24/7 Monitoring
Breakdown
Plant Tuning
Conditioned Monitoring
Car Park Utilisation

HVAC
Air-Handling Unit
Boilers
Pumps
Fans
Energy Control
Variable Air Volume
Air Quality

Web Connectivity
Using TCP/IP or WLAN

Example: Home/Office Facility





Competitive advantage

Company	Architecture	Product	Performance	Price
Mcu-dsp	Data-acq with MCU	Single-chip	8-bit CISC DSP with MCU	< $3
Ember	Proprietary controller	Chipset	8-bit RISC	~$10
Freescale (Motorola)	Based on generic 68HC08 product	Chipset	8-bit CISC with no DSP	$6.75
Atmel	Based on Atmega Controller	Chipset	8-bit RISC	$7

Market potential

- Industrial Wireless Sensor Networks business*
  - 168 million sensor nodes by 2010
  - End market of $5.9 billion
  - Reduction in wasted light and heating up to 50%

- *Mcu-dsp's market segment*
  - *Estimated silicon business opportunity - $1 billion*

* Source: ON World Report of June 2004

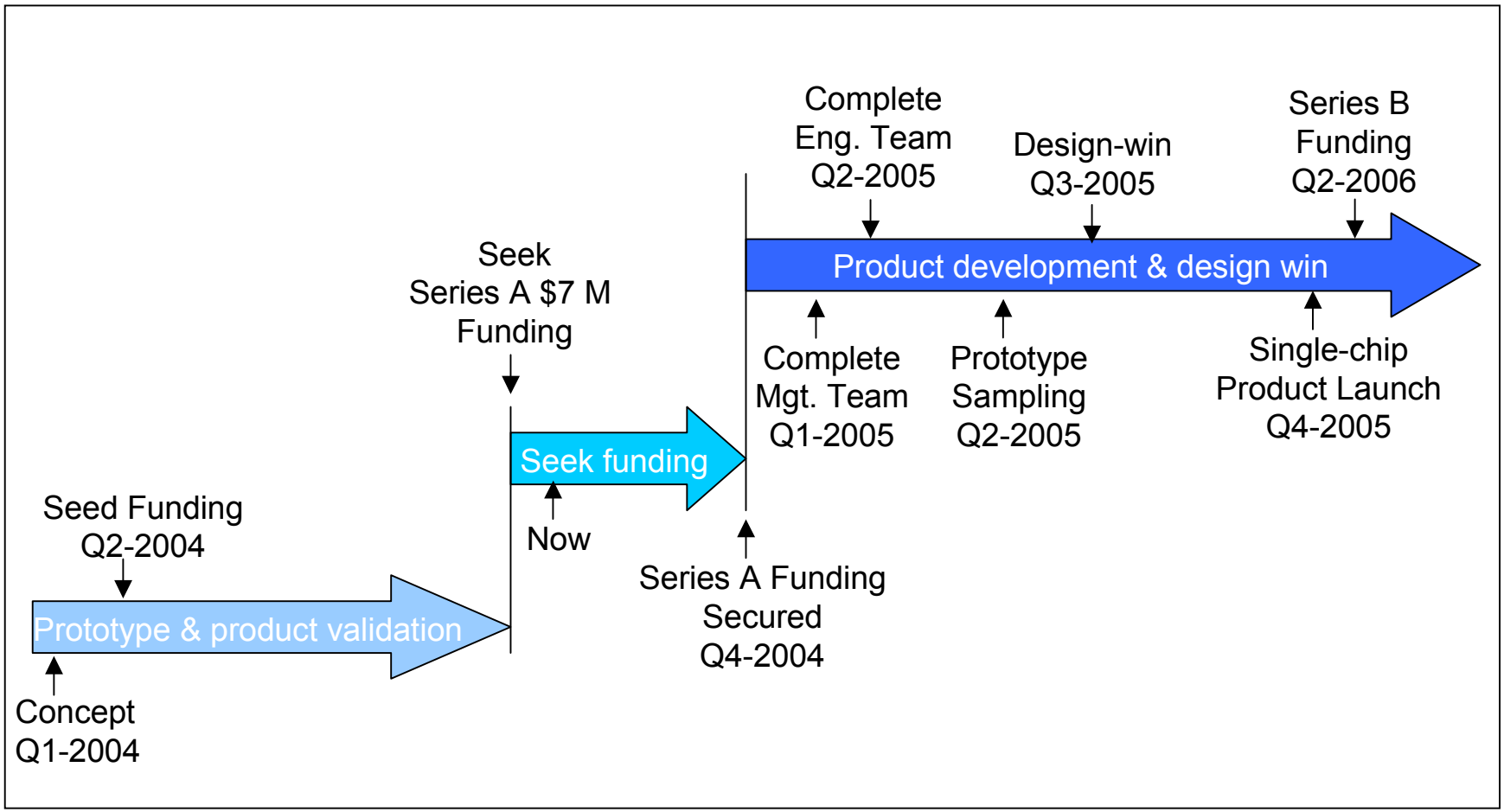
Target Customers

- Industrial- and Home-automation companies
  - Honeywell, Johnson Controls, Invensys
  - Small, specialized automation developers
- Appliance manufacturers
  - Carrier Aircon, Honeywell, Philips, Samsung

Financial Projections

Income Statement ($M)				
	2005	**2006**	**2007**	**2008**
Sales	0	3	15	40
COGS	0	1.5	7	17
R&D	3.3	5.7	9.3	12.3
SGA	1.4	2.8	3.7	4.4
IBT	-4.7	-7.1	-4.9	6.3
Taxes	0	0	0	1.6
IAT	**-4.7**	**-7.1**	**-4.9**	**4.7**

Past and Future Milestones



Success Factors

- Flexible architecture
  - Extensive technology and product validation
  - Networking with talent to join company
  - Keeping product architecture flexible
- Future milestones
  - Complete prototype by Q2-2005
  - Complete single chip by Q4-2005
  - Hiring experienced talent
- Completing specifications
  - Participate in industry to complete Zigbee specifications
  - Support adoption of Zigbee

Investment potential

- Market leader in 3 years in WSN business
  - Sales
    - $3M in 2006, $40M in 2008
    - Potential for high company valuation (NASDAQ: 6X Sales)
  - Future target markets
    - Diverse base of Industrial, Consumer, and Homeland Security
  - Exit strategy
    - Possible M&A by OEMs and silicon vendors
    - Silicon Labs & Cygnal, Ember & Cambridge, Itron & Silicon Energy

Management Team

- **60+ yrs of domain experience**
- **Sanjay Agarwal (Founder and CEO)**
  - Previously founder of Chipsol, Inc. (Silicon Valley startup)
  - Multiple successes in automation semiconductors domain
    - Microchip, Philips, Texas Instruments, Solarflare (startup)
  - MSEE (UT-Austin), MBA (University of New Mexico)
- **Ken Lies (VP – Design Engineering)**
  - Very successful in automation semiconductors
    - TFE (startup), Atmel, Philips, Texas Instruments, Siemens
- **Jonathan Guy (VP – Hardware Engineering)**
  - Founder of Revely Microsystems, Engineering Director – Anacon
- **Advisory board**
  - David Race – Former VP Qlogic, Founder SDR
  - Bob Bridge – Founder/CEO Zilker Labs, Agere, Cirrus Logic
  - Rajmohan Rajaraman – Associate Professor – North Eastern University – Boston, MA.

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